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CERAMICS

HINTS TO CHINA PAINTERS.

III. COLORS.



THE application of vitrifiable colors to porcelain is a more complicated matter than the use of colors not subjected to an intense heat in the finishing process. They must become vitreous by the action of the fire,

must melt at a certain temperature, must adhere perfectly to the surface to which they are applied, must expand or contract with it, and after having been fixed upon it must remain unaltered by atmospheric conditions or the action of water. The color after firing should also be as nearly as possible the same as it was before undergoing that process.

The skill of the manufacturers of vitrifiable colors has, however, fulfilled all these conditions, and we have a surprisingly large number of colors from which to choose our palette. It is only necessary in mixing the colors for the different tints desired to select those which under the action of the fire will not react disadvantageously upon each other. To guard against such disasters, some knowledge of the chemical constitution of the colors is desirable, and I will therefore devote this article to the consideration of the chemical properties of the colors and the result of their combination with each other.

The bases of the vitrifiable colors are certain metallic oxides. To secure their adhesion to the glaze they are mixed with fluxes which are generally composed of sand, red lead, borax and boracic acid in varying proportions. The different colors have for their bases the following substances :

The whites are made from a base of oxide of tin, arsenical acid or phosphate of lime.

Grays are generally made of mixtures of iron and cobalt except the valuable gray made from platinum.

Blacks from iron and cobalt.

to the oxides of iron and zinc. Very dark yellow is made from the oxide of uranium. The ochres receive their tint from the presence of oxide of zinc.

The reds are made from iron.

The browns from iron, zinc and cobalt.

The greens are obtained from the oxide of chrome in combination with other metallic oxides, from which a great variety of tints is made.

The carmines, purples and violets, are obtained from gold with purple of Cassius and a little chlorate of silver.

We have, then, colors which may be divided, accurately enough for our present purpose, into two groups :

Blues.—Bleu ciel azur (sky blue), bleu riche (deep blue), vert bleu riche (deep blue green).

Greens.—Vert No. 5 pré (grass green), vert émeraude (emerald green), vert brun No. 6 (brown green).

Yellows.—Jaune jonquille (jonquil yellow), jaune d'ivoire (ivory yellow), jaune d'argent (silver yellow), jaune orangé (orange yellow).

Blacks.—Noir corbeau (raven black), noir d'iridium (iridium black).

Grays.—Gris de platine (platinum gray), gris tendre (light gray).

White.—Blanc fixe (permanent white).

Browns.—Brun foncé (deep brown), brun sepia (sepia), brun 108 (brown 108).

Reds.—Rouge capucine (capucine red), rouge chair No. 1 (flesh red No. 1), brun rouge riche (deep red brown), violet de fer (iron violet).

Carmines and Purples.—Carmin foncé (deep carmine), pourpre riche (deep purple), violet d'or foncé (deep golden violet).

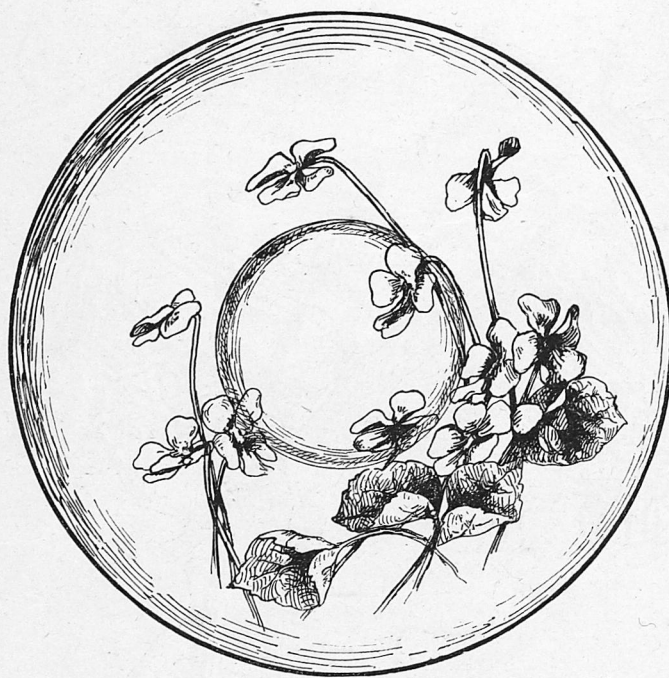
There are also special colors prepared for grounds, although any of the above can be used for tinting. If a deep ground tint border, or a deep blue or black ground is desired, it is better to have the color in powder. A good selection of colors for grounds would be :

Bleu marin, café au lait, celadon, gris tourterelle, rose pompadour, turquoise bleu.

IV. DECORATION OF THE CUP AND SAUCER.

Tint the ground of the cup and saucer with silver yellow. Paint the leaves with grass green heightened in the lightest parts with jonquil yellow and shaded with brown green and emerald green. The flowers are painted with golden violet shaded with the same.

M. LOUISE McLAUGHLIN.



DESIGN FOR A SAUCER. "VIOLETS."

BY M. LOUISE McLAUGHLIN.

First, those which do not contain iron—the carmines, blues and whites.

Second, those whose base is iron or which contain iron in greater or less degree—the reds, browns, blacks, yellows and greens.

The colors composing each of these groups can be mixed with each other, but not with those of the other group, as the chemical change produced by the firing would destroy the tints. One exception may be given : blue may be mixed with black to modify the tone of the latter. Blue and black may also be used with red to form a shadow tint, but the result is not very certain, the chemical action of the colors upon each other having a tendency to produce blackness. Such tints can better be produced by the use of gray made from platinum (gris de platine). As this color contains neither oxides of iron nor of cobalt, it can be mixed with blue and red and the shadow color thus formed will be the same after firing as before.

Yellow is also a color in the use of which caution must be observed. In admixture with red it is likely to predominate after firing if used in excess, even if the excess of yellow is not apparent before.

With these exceptions colors can be mixed in painting on china just as non-vitrifiable colors, and when once the restrictions mentioned above are fixed in the mind of the student, the matter is very simple.

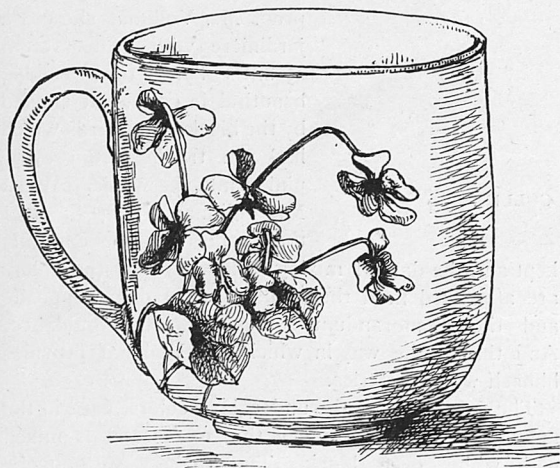
Vitrifiable colors when properly mixed and handled do not change much in firing. Allowance must be made for the transparent effect produced by the glaze brought out in the firing, as it intensifies the colors like varnish upon an oil painting only in a greater degree, as the colors used in china painting appear quite dull before the firing.

A useful list of colors, selected from those manufactured by M. Lacroix, may be given as follows :

SUGGESTIONS ABOUT FIRING.

AMATEURS desirous of having their work look well with one firing, should carefully observe the following rules given by Mr. Alling of Rochester :

Use carmine No. 1, or light carmine A, in painting apple blossoms, roses, and flowers of that character. Paint delicately, using for dark touches or shading, a very little purple mixed with the carmine. Carmine

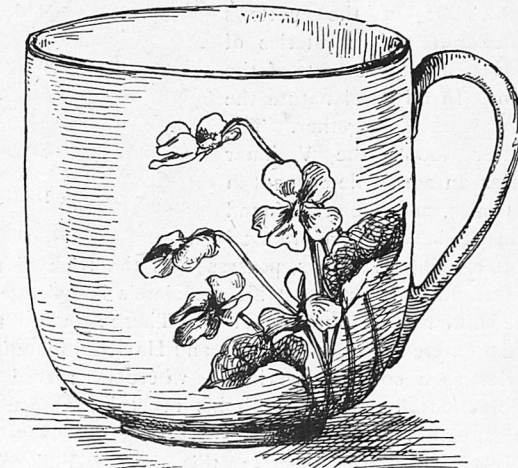


DESIGN FOR A CUP. "VIOLETS."

BY M. LOUISE McLAUGHLIN.

Blues from cobalt. For blue with a tint of indigo the cobalt is intensified with the oxide of manganese. An azure tint is given by the oxide of zinc. The base of ultramarine is obtained from alumina and the oxide of cobalt.

Yellows are made from the oxide of antimony added



DESIGN FOR A CUP. "VIOLETS."

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No. 2 requires so much heat to develop it that grays, ochres, and browns fire very light, while greens are apt to flake off. Purples, maroons, ruby purple, and all colors of that character should be fired alone to obtain a fine effect, the rest of the painting or tinting receiving a second or lighter firing. For handles use raven

black, with a very little lavender oil to avoid blistering. If two or three coats of colors are required to give a thick body of color, use a little lavender oil instead of mixing with turpentine. Allow the first coat to dry thoroughly before applying a second or third coat.

Browns, when used on yellow, should be mixed with a little purple to prevent disappearing. Red, when mixed with or when painted on yellow, should be used very strong or the yellow will absorb it. Capucine red should never be mixed with yellow of any kind.

Cover your turpentine, when not in use, to avoid lint and dust. If using frequently, do not empty the cup each time, but fill up with fresh. If left standing for some time, take a clean cup, for the spirits will evaporate and make the paints too oily and liable to blister.

China, which requires gilding, must have the paint thoroughly removed from parts to be gilded, and be all cleaned. If the paint is not dry enough to pack, place the articles in the oven with the door open until perfectly dry. This method can be used for drying either one or two coats. The paint may look dull, but firing will restore it. Always write full directions in regard to gilding and banding. Wrap all articles in soft paper and pack them carefully in dry straw or excelsior.

VOLKMAR FAÏENCE.

At the Centennial Exposition, where the American public saw so many things for the first time, was shown a new ware, called Limoges, because it is not made at Limoges but at Paris, where it is better known as Barbotine. Charles Volkmar, a Baltimore student of art abroad, under Harpigny and others, visiting this country on the great occasion, was attracted by the unexpected display of this pottery whose coloring was at once soft and brilliant, and which gave opportunities for that broad handling and those suggestive effects then becoming so dear to the Parisian art student. Returning to France, and taking a house at Montigny sur Loing near Fontainebleau, one of the suburbs of Paris, Mr. Volkmar found himself near a humble pottery, whose owner was glad to enter with him into an artistic alliance, returning for Mr. Volkmar's painting on his vases, his knowledge of the potter's handicraft, the mysteries of glazes and the secrets of the kiln. In all good nature the two worked together. The potter found the Volkmar vases an agreeable element in his sales, and the artist found himself becoming a practical potter, skilled in clays, possessed of the trick of the wheel, and with at least his associate's knowledge of the subtler branches of the craft. These acquired, the artist entered in turn the Deck and Haviland manufactories as a common workman, where he served an apprenticeship, which, with his artist knowledge of color, earned for him the secrets of underglaze.

Like many other secrets, this, in Mr. Volkmar's opinion, proves to be very simple when known. The potter, by virtue of his trade, is something of an alchemist, and like the alchemist he surrounds it with much mysterious circumstance. The secret of the potter is in his patience, observation, and memory, rather than in his fluxes and the color of his heat. The essentials of the potter's craft are few. Color, glaze, and temperature must exist in certain relations to produce certain effects, and these relations are the result of experiments registered in the memory and elsewhere.

Thus equipped with his knowledge, Mr. Volkmar returned to this country. After some desultory work and attention to teaching, he has now finally established himself at Tremont, an outlying village brought into New York City by a line of street cars and the continuation of uninhabited avenues. Here are his home, studio, pottery, kilns and salesroom, and here the clay comes in its virgin state to undergo its first kneading. Barbotine, it may be said in the beginning, as made by Mr. Volkmar and in the manufactories abroad, differs in an important matter from that produced at Cincinnati, where the experiment has been independently carried on. At Cincinnati the work is done on the moist clay; the colors are mixed with the "slips," and the drying of the body and of the decoration goes on together. This, Mr. Volkmar insists, not only obliges the artist to work at a disadvantage, but is not the true process. The disadvantage lies in the necessary hurry which the workman must use in finishing his decoration while the body is still wet, the danger of draughts which will unequally dry the article, or the alternative

the clay. He has been using the Woodbridge clay, but has relinquished that in his underglaze work for the cream clay, used at the Rockwood Pottery, Cincinnati. At present he is considering other clays and new combinations, but these still belong to the twilight land of experiment. The articles to be decorated are made either by Mr. Volkmar himself, or by an assistant from his designs and under his eye. The production of new forms is inevitably aided by the general artistic intelligence of a trained artist. For many of the desirable forms plaster of Paris moulds have been made, facilitating their manufacture. Others are produced in the time-honored way. This branch of the pottery goes on independently of the decorative department as the process indicates, since the ware to be decorated may be taken up at any time.

Color is produced from some half a dozen metallic oxides, no more. This narrow limit puts to flight, says Mr. Volkmar, many pretended mysteries. From cobalt blues are obtained, antimony gives the yellows, iron the browns, copper the greens, and chrome a

more vivid green; the reds and blacks are combinations. The colors can be bought prepared by a chemist, but Mr. Volkmar rejects all unnecessary aid, and prepares his own colors. The extra labor gives him two advantages: The first is that he is better able to judge of their purity, the second that they are greatly cheaper. The amateur would be surprised at the limited range of his palette. In all there are but twelve colors. These are yellow and orange, a light and a dark blue, red and pink, light and dark brown, a cold green, a warm green, chrome-green, and black.

Into each color enters the flux or flowing element. This is of two kinds and does double duty. The flux is either red lead or borax; the former serves to deepen the tint, the latter to lighten it; red lead, for example, forming with the oxide of antimony orange, and borax with the same oxide producing light yellow. In the prepared colors the flux is already added. This important part of the work Mr. Volkmar himself performs. In addition to its effect upon the tint it is even more important that the flux give to the color its proper consistency under the fire. In proof Mr. Volkmar showed a jardinière with a decoration of birds flying over a lake, beautiful in color, but spoiled by the black in the birds which had run trailing from every pinion into the water. When Mr. Volkmar prepares a color the proportions are carefully

kept and the date of mixing added. When the colors are afterward fired the results are set down opposite and the memorandum serves for future guidance. And this is the way in which Mr. Volkmar provides himself with mysteries.

The peculiarity of the underglaze colors, used in the manufacture of barbotine, is that each color is mixed with white, even black. The analogy to gouache painting in which Chinese white serves as the medium is apparent. The white is what is known as "slip," a clay which, as Mr. Volkmar uses it, has been previously burned and ground. The amount of white varies with every color, and can only be known by experiment. A peculiarity of its use is that at a certain point the white only will appear, that is, the gradation secured with it ceases abruptly. This slip with the color is mixed with water until the proper consistency is acquired. The colors prepared and the clay thoroughly



DESIGN OF A DECK PLATE, PAINTED ON A GOLD GROUND, BY R. COLLIN.

of working in a close room. If all these difficulties were obviated there still remains the fact that parts of the clay will dry faster than others. The shrinkage being unequal it is impossible to extend decoration over certain parts, as, for example, over the body into the neck of a vase. But the more important difference, Mr. Volkmar contends, lies in the greater brilliancy of the effects which his method produces.

In Mr. Volkmar's work the decoration is applied only after the clay is thoroughly dried, and all shrinkage has ceased. A vase may be modelled and put aside indefinitely or until it is required. The decoration may be begun and worked on only at leisure. The clay in which the colors are mixed has been previously burned, so no shrinkage need be feared on the part of the decoration. These he considers minor considerations, but of value, as every artist will recognize.

As has been said, Mr. Volkmar's work begins with

dried, the decoration begins. Barbotine is of two kinds—that in which the decoration is modelled in relief and that in which the painting is applied to the plain surface. In each case the process of applying the paint is the same. It is to the latter that Mr. Volkmar gives the most of his consideration.

His advice as to painting or rather handling is to treat the clay as one would a canvas. Forget all about the firing and simply try to get the effect. It is implied, of course, that whoever attempts barbotine must first have learned something of the many changes produced by firing. The subsequent brilliancy of the color must be reckoned on, and the artist must see in his mind's eye, despite the dull hues he is manipulating, their ultimate brightness and harmony. Certain technical facts must also be known, as the strength of chrome-green and the likelihood that red will be swallowed up by it if they are not discreetly kept apart. Other colors will entirely change their character under certain influences. This sort of knowledge must come from experiment and practice, and this the artist incorporates, so to speak, in his mind, and acts upon it without thinking.

The effects most suitable for barbotine decoration are broad, strong, and simple. In producing such effects Mr. Volkmar urges the advantage of his process. In his greater leisure to work, touch after touch may be added, and a better relief given to the decoration than in the more hurried work on the wet clay. The ground he prefers is usually blue, brown, or orange, softly dabbled on. His own favorite motive, judging at least from the examples shown, is a landscape with water and some living creature, usually the interesting duck or the picturesque goose. After the decoration is applied, the firing follows whenever it is most convenient. The detailed arrangement of the piece for firing need not be described since it is that of all potteries.

The kiln, however, deserves a word. This is of Mr. Volkmar's own invention. It is a hollow dome of brick with four fire holes and a central flue through which passes the heat from the archway underneath. The chimney, instead of passing through the centre, is built several feet away and connected with the kiln by a channel beneath. At the side of the chimney is a damper which practically cuts off the escape of the heat. The advantages claimed by Mr. Volkmar are: First, the fact that the pieces in the lower part of the kiln are as thoroughly fired as those in the upper part, which is not the case in the kiln in common use. Second, economy in heat, of which practically none is lost. Underglaze is fired at a much lower temperature than porcelain or wares intended for service. Mr. Volkmar fires at what is called in the French kilns "demi grand feu." Certain colors resist the fire better than others. Blue, for example, resists a hard kiln fire which accounts for its use in transfer painting on

white ware. After the kiln is filled the door is bricked up, and the fire is kept burning for ten hours. When the ware is at a white heat, as seen through a peep-hole in the rear, the flue at the top of the kiln is opened and the heat allowed to escape. The biscuit, as the ware is called after the first firing, is now ready for glazing, if the result of the firing is successful.

The glaze used for colors is not as hard as that for general white ware. Mr. Volkmar's glaze is also his own work. This is principally of fine glass sand with borax and soda added, which gives a glaze of about the same durability as glass, the sand in harder glazes or those adapted for grand feu being replaced by feldspar. The glaze is mixed with water, and the biscuit dipped in it until it is thoroughly coated, when it is dried and

rated, and in this condition it is removed to the kiln, where the colors are baked in and the paper burned away. To this extent the manufacture of barbotine has gone under Mr. Volkmar. The enterprise is novel, and the results of his experiments and the development of his work will be watched with interest.

MARY GAY HUMPHREYS.

Among the Dealers.

PAINTINGS on porcelain are being used more than ever for interior decoration, and are imported now at such low prices as may well startle American amateur decorators, who have been selling their productions at a good profit. Messrs. James M. Shaw & Co. show a great variety of such pieces; but by no means confine their importations to articles which can be bought for a few dollars. They have probably never had anything more charming than the two graceful little brass-mounted porcelain toilet tables seen recently at their rooms. Each has, beside two shelves formed of hand-painted slabs, a painted porcelain box daintily lined with rich quilted satin, above which, set in a frame of enamelled brass-work, is a heavy bevelled mirror. Another new idea is a fire-screen of quadrangular painted porcelain plaques, which can readily be turned over in their brass frames and made to do duty as bric-à-brac shelves.

THERE are other "holiday" ceramic novelties at Shaw's which, while doubtless very saleable, cannot be commended from an artistic standpoint like these beautiful little articles of furniture. A cup and saucer, for instance, consisting of a Greek cap for the former and a slipper for the latter, may be an amusing fancy, but is not to be commended on the score of good taste. The "trembleuse" cups and saucers, which in the time of Louis Quatorze were in fashion with the court ladies, who were accustomed to take their chocolate in bed, are revived in pleasing variety; and there is a modification of the "trembleuse" idea consisting of a kind of socket in the saucer to hold the cup in position. This novelty, doubtless, will attract some buyers, but the person of taste will prefer the more graceful shapes of the Royal Worcester, Crown Derby, Minton, or Haviland porcelain.

JOHN BENNETT has never produced better pieces of his underglaze decoration than those on view now at Messrs. Davis Collamore & Co.'s. Rich low-toned greens continue to be his favorite grounds, and upon these he builds admirable color effects. Particularly beautiful is a vase, two feet two inches high with dogwood decoration. Another vase shows a somewhat new departure in color for him, the motive being the rich red and gold of autumn foliage. An agreeable effect, more in his old vein, is shown in the decoration of a cylindrical vessel with pale blue-bells, with brown calyx, on an olive green ground. Mr. Bennett no longer confines himself to his former limited range of colors, which made a collection of his ware rather monotonous. In his exhibition at Collamore's, while he still favors the old combinations on brown and olive grounds which made his reputation, he is also represented by richer color effects, including bright yellows, reds, and turquoise and mazarine blues. His characteristic floral decoration, without shading

and with charged outlines, is consistently maintained.

MR. ROBERTSON, of Messrs. Vantine & Co., lately returned from a business tour in the Far East, brings some fine old pieces of Chinese "solid color." Especially noteworthy are two fine specimens of robin's egg blue of different colors, a bit of Ming red hundreds of years old, a large and wonderfully perfect piece of mustard soufflé, a bowl of apple-green of exquisitely fine crackle, a small piece of flambé very curiously marked, and a bowl colored, under the thinnest of glazes, with that pure coral red so much prized by collectors. Among the large objects are a noble celadon pilgrim vase twenty inches high; a vase of lapis lazuli blue almost as large; one of turquoise blue, finely crackled; and a great lavender vase, twenty-eight inches high, with raised decoration. A particularly fine vase and quite unique is decorated over the glaze in red and blue in raised enamel. Notable, too, is a beautiful hawthorn beaker of the true form and color. Mr. Robertson has also brought with him some pieces of the rare egg-shell china, including a plate so translucent that it must have been made almost wholly of the pure glaze.



VOLKMAR FAÏENCE. DRAWN BY CHARLES VOLKMAR.

again submitted to the fire. This, in general, is the treatment given to barbotine, varied of course according to circumstances. In many instances failure can be changed into success by retouching, reglazing, and re-firing. In others mistakes are fatal, as in the running of a color.

Beside his ordinary barbotine ware Mr. Volkmar has perfected a method of transferring etchings to pottery. The etchings to be thus transferred are made with broad, strong effects, and as little detail as possible. They are printed with what may be called pottery ink, that is to say, an ink made of underglaze materials. The moistened print is laid on to the article to be deco-